

# 73 Review

by Pete Putman KT2B

# Down East Microwave Model 2345LY

## 45 Element 23 cm Loop Yagi

Down East Microwave  
Box 2310, RR #1  
Troy, ME 04987  
(207) 948-3741

Price Class: 2345LYK 23 cm Loop Yagi Kit: \$82.00  
2345LY Assembled and Tested: \$99.00

The 23 centimeter band (1240–1300 MHz) is fast becoming the most accessible of the amateur microwave allocations, mainly due to the wide range of commercially-made equipment available. This includes several different antenna designs from both foreign and US manufacturers, ranging from loaded mobile/base whips, to "long-boom" designs for weak signal (SSB/CW) and ATV work.

The Down East Microwave 2345LY falls into the latter category, using 45 full-wave loop elements on a 15 wavelength boom to achieve nearly 20 dBi gain. The design is based on the classic loop yagi pioneered by G3JVL many years ago, and loop yagis have found wide acceptance from 903 to 3456 MHz since. Down East's literature claims that "...four 23 cm 45 element 'loopers' compare favorably in gain to a 7-foot dish, with much less wind resistance." Not only that, but four loop yagis are considerably easier to install on a frame and use with a rotator than a dish.

### Check Out The Parts

I selected the "K" (kit) version for this review. 2345LY construction is quite simple, although there are several bags of parts to contend with. I suggest you first sort all of the hardware into four or five piles. Down East ships a small package of 4-40 stainless screws, lockwashers, and nuts that are used to secure all 45 elements to the boom. Sort these into three piles for quicker assembly. 8-32 nuts, lockwashers, and bolts are also included for the boom-to-mast clamp assembly, and these can be set to one side.

### Assembly

Only one tool is really needed for 95% of the assembly work. Use either a 1/4" wrench, or, better yet, a 1/4" socket drive/spintite. There are 7 sealed bags containing like elements, and each is clearly labelled. Don't open the next bag until you are finished with the prior one, oth-

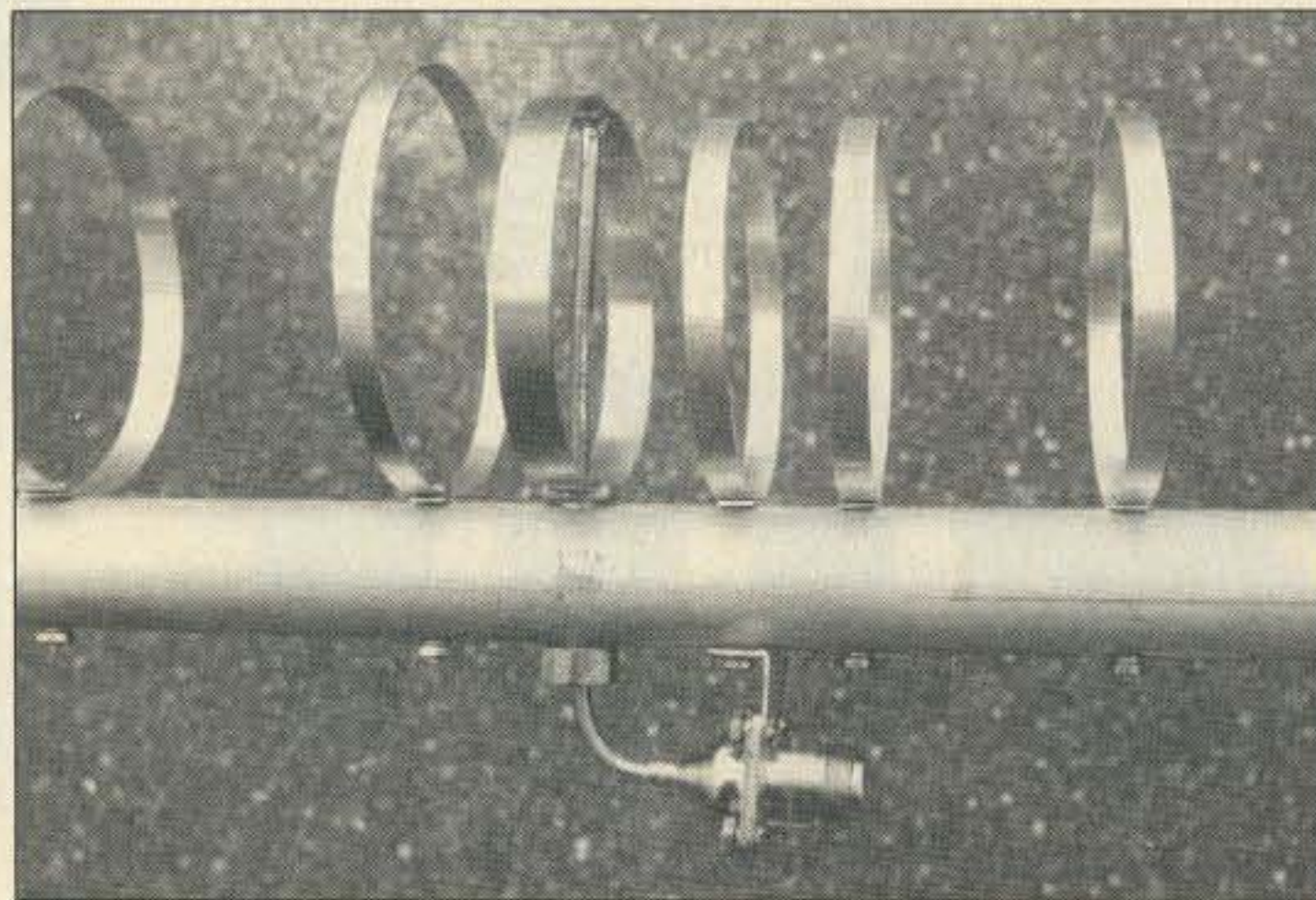


Photo A. This view shows how the driven element is fed, using UT-141 rigid coax line. The loop is a full wave at 23 cm. Input impedance is 50Ω.

erwise you may mix up the parts, causing great confusion! The differences in circumference between element #D23 and #D24 is just 0.101 inches, so a mistake there would be hard to find and correct.

It's best to install the elements from the rear forward. The lockwashers allow quick tightening, but make sure the ends of each loop don't flex inward or outward. Holding the loop while spinning the socket drive will prevent this. Tighten the loops as snugly as possible to avoid misalignment from light bumps or incidental contacts as the antenna is installed.

As with all Down East loop designs, two

reflectors are used. Unlike the 33 cm and 13 cm versions (reviewed earlier this year), the two are of different width aluminum stock. The driven element is fashioned from brass strip and tubing, with pre-drilled holes for the UT-141 coaxial feeder.

Photo A shows the position of the driven element relative to the reflectors and first director. Down East supplies a pre-cut piece of UT-141 cable soldered to a flange-mount N connector. This cable is inserted through the tubing end of the driven element and soldered to the top. Be careful to align the N connector with respect to the boom before soldering the coax! The reason for this action is that the connector and flange will be bent forward to attach under Director #1, with the connector facing the front of the boom. Be sure to flow solder evenly around the shield of the rigid coax line where it attaches to the driven element.

The two boom sections attach using the hardware from elements #D22 and #D23, allowing quick break-down for transporting the yagi. The boom-to-mast assembly consists of two pieces: (1) A machined piece of 1/2" square tubing and (2) A mast plate with hardware. The tubing fastens to the boom with two 8-32 screws, washers, and nuts. The plate attaches at a right angle with two more 8-32 screws, and the entire assembly can then be bolted to a mast.

The only catch here is that Down East supplies U-bolts for 1" diameter mast stock! If using a larger material, a hole will need to be drilled on to the plate accordingly. Probably the reason(s) this size was arrived at are the accessory stacking frames for two or four "loopers," that use 1" stubs with 2" bolts to make the mast connection. Evidently, Down East expects to sell lots of these in pairs! Keep in mind that the 2345LY (like the 33 cm and 13 cm versions) must be mounted above any mast. If the mast protruded into the loop area, it would seriously detune the antenna.

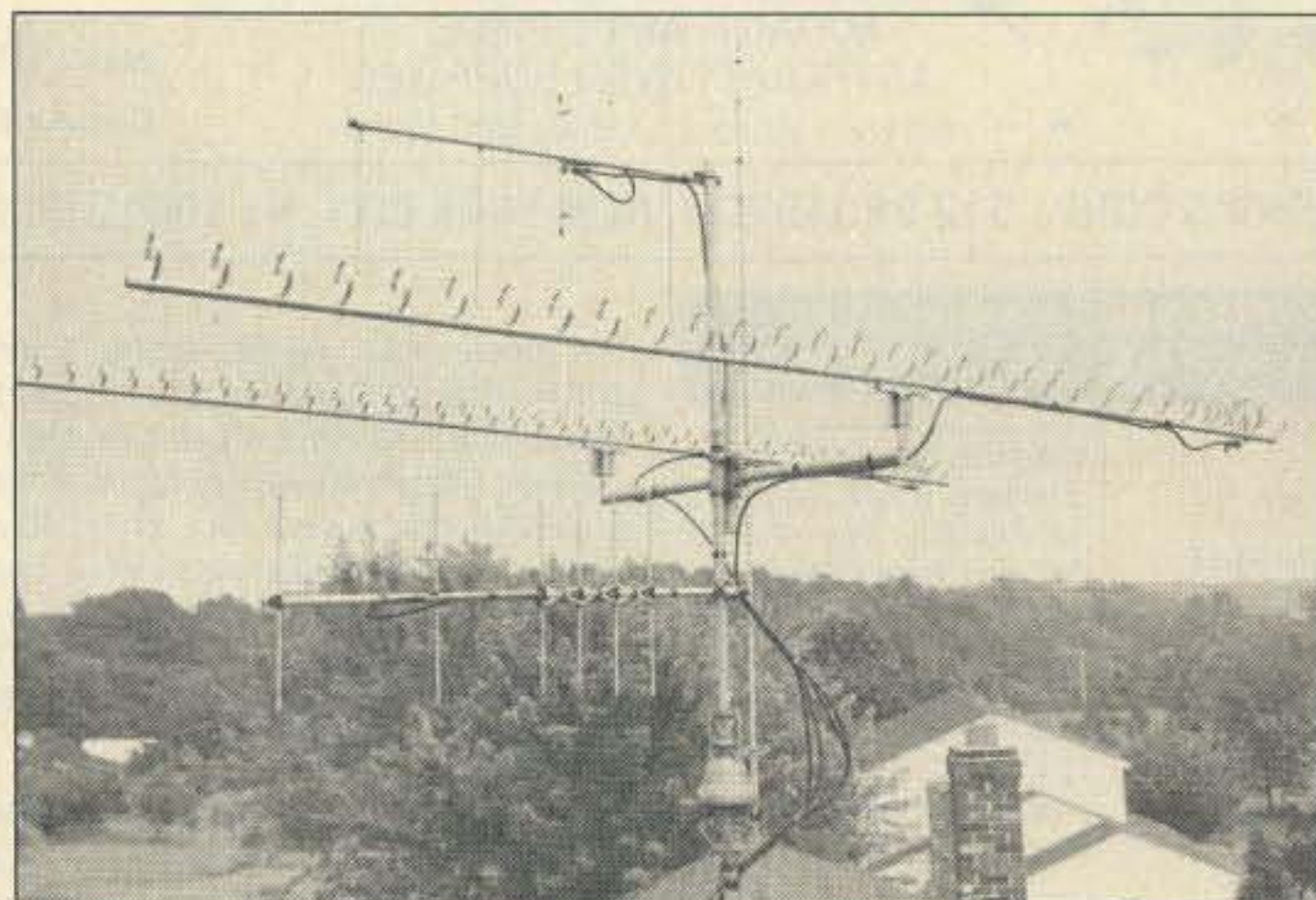


Photo B. The 2345LYK in service (rear) and Down East 3333LYK is front. They make a nice pair for microwave operation!

### Technical Data for the Down East Microwave 2345LY

Specification	Rating
Frequency Range:	1.25 to 1.3 GHz
Number of Elements:	45
Boom length:	143 inches (15.7 wavelengths @ 1296.000 MHz)
Weight:	5 pounds
Gain: (3 dB Beamwidth, E-plane)	> 20 dB
Maximum Power Capacity:	550 watts average
VSWR: (measured with Bird 43 and 25K slug @ 1296.100 MHz)	1.05:1

Photo B shows the 2345LY installed on my "solution" to the 1" mast clamps—a custom-welded trident assembly with 1" stubs at either end. (This might be a neat thing for Down East to add to their catalog!) This system allows the use of two separate loopers anywhere along a 1½" to 2" mast. It is also used when I go portable on 903 and 1296. The 2345LY is to the right, with the 3333LYK to the left. The load is sufficient for a garden-variety CD45II rotor to turn without much sweat.

#### Observations

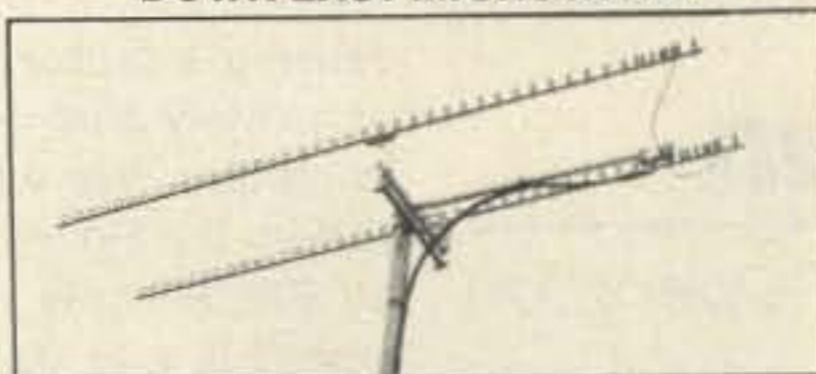
How does it work? Very well! The pattern of the 2345 is not quite as sharp as my Tonna 55 element yagi, but in everyday use with a transceiver (such as the IC-1271A) or transverter (such as the LT-23S), there was little noticeable difference. Communications were possible from this location to Baltimore, southern New Jersey, and into Massachusetts, using an outboard 60 watt amplifier. It will be interesting to see how the circular polarization obtained from the use of a loop element minimizes "multipath" signals from nearby hills and obstructions.

One advantage of the 2345LY is the absence of a boom brace. The 1" diameter tubing used for the boom, is rigid enough that "sag" isn't evident. Matching was a breeze: Down East suggests bending the driven element to 2.75 inches high for best match. However, I merely soldered the UT-141 cable to the driven element and made no attempt to adjust the height. As the table shows, virtually no reflected power was detected.

Another advantage that "looper" fans are quick to point out is that raindrops and condensation droplets fall to the mounting point of the antenna, minimizing detuning effects that can drive conventional half-wave elements out of resonance. This is certainly true, but note also that heavy, wet snow tends to pack up in loop elements.

Regardless, the Down East Microwave 2345LY is an exceptional value in a high-gain, lightweight yagi for general 23 cm work. Note that the 2345 is also available assembled and tested, but the kit version is easier to ship. Construction is simple and the materials are of high-quality T60-6 aluminum stock with stainless hardware. It should find favor not just with SSB and CW types, but also ATV, packet, and FM operators. **73**

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Above antennas assembled and tested. Kits available.

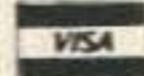
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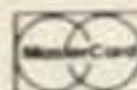
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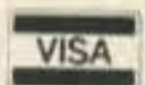


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